



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,236	09/09/2003	Toru Kawasaki	8001-1171	8844

466 7590 10/29/2004

YOUNG & THOMPSON
745 SOUTH 23RD STREET
2ND FLOOR
ARLINGTON, VA 22202

EXAMINER

HU, SHOUXIANG

ART UNIT	PAPER NUMBER
----------	--------------

2811

DATE MAILED: 10/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/657,236

Applicant(s)

KAWASAKI, TORU

Examiner

Shouxiang Hu

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 4, 6, 7, 14-16, 20, 25, 28 and 29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 8-13, 17-19, 21-24, 26 and 27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 09/09/2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims 4, 6, 7, 14-16, 20, 25, 28 and 29 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on August 6, 2004.

Accordingly, claims 1-29 are pending in this application; and claims 1-3, 5, 8-13, 17-19, 21-24, 26 and 27 remain active in this office action.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the subject matters of the "horizontal shift register electrodes" in the imaging area and in the peripheral area (such as in claim 1), the "planarized surface" in the claimed sensor (a final device structural; such as in claim 1), and the "electrical connection" to the register electrodes in the peripheral area (such as claimed in claim 26) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

In addition, figures 1-4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 1-3, 5, 8-13, 17-19, 21-24, 26 and 27 are objected to because of numerous informalities and/or defects, including but not limited to the following:

Claims 1, 8, and 21 each recite the subject matter of the photoelectric conversion elements being surrounded by the vertical shift register electrode; but the word of surround may mean: to extend on all sides of simultaneously, or to encircle; while according the disclosure (see Figs. 6 and 16B), none of the photoelectric conversion

Art Unit: 2811

elements is covered on all sides simultaneously or encircled by the recited vertical shift register electrodes.

Claims 1, 8 and 21 each recite the term of "said (vertical) shift register electrode"; but fails to clarify which of the recited vertical shift register electrodes it refers to.

In claim 2, the term of "said plurality of first and second" lacks a sufficient antecedent basis in the claims.

In claim 17, the term of "each of shift" should read as: --each of said shift--.

Claims 17-18 fail to clarify whether each of the recited shift register electrodes is also elongated in the imaging area.

In claim 19, the term of "elongated portions" should read as: --said elongated portions--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-3, 5, 8-13, 21-24, 26 and 27, in so far as being supported by the elected species, are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in

Art Unit: 2811

the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Each of these claims recites or implies the subject matters that the recited imager device comprises both of vertical and horizontal shift register electrodes in both the imaging area and the peripheral area. However, according to the instant disclosure, the instant invention is drawn to a CCD-type imaging device, while it naturally comprises vertical shift register electrode, the disclosure lacks an adequate description regarding what is the structure and function of the horizontal shift register electrode, coexisting with the vertical ones, in such a CCD-type imaging device.

Furthermore, at least claims 1, 8 and 22 explicitly recite the subject matters that the instant invention comprises an interlayer insulating film that is planarized and covers both of the various shift register electrodes in the imaging area and the ones in the peripheral area. However, according to the disclosure (see Figs. 11-16), a portion of the originally planarized layer 318 is already removed in the charge transfer region (See Fig. 11B); and the remaining layer 318 and/or the later-added layer 306 are/is not a planarized layer as the top surface of them/it is not on a same level (see the different top surface levels of the layers 318 and 306 in Figs. 16A through 16C, respectively).

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 2811

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 17-19, 21, 23, 24, 26 and 27, insofar as being in compliance with 35 U.S.C. 112 and as being best understood in view of the claim objections above, are rejected under 35 U.S.C. 102(b) as being anticipated by applicant's admitted prior art ("AAPA").

AAPA discloses a solid state image sensor (Figs. 1-5 in the instant disclosure) comprising: a semiconductor substrate (801) having an imaging area (see Fig. 4A and 4B) and a peripheral area (see Fig. 4C) that naturally surrounds the imaging area; a field isolation dielectric (852); photoelectric conversion elements (see Fig. 4A) each having an insulating film (a lower or an upper portion of layer 802, or a lower or an upper of portion of layer 806, as the layer 802 or 806 can always be regarded as be formed of a plurality of sub-layers); a charge transfer section (See Fig. 4B) having a plurality of elongated shift register electrodes (828 and/or 830) that are further extended over the field isolation dielectric and formed from a single conductive layer; an interlayer insulation film (806) covering the elongated portion of the shift register electrodes in the peripheral area, wherein the interlayer insulation film (806 in Fig. 4C) in the peripheral area is thicker than the insulating film (a lower of portion of 806 in Figs. 4A and 4B); and, a conductive layer (808) on and across the shift register electrodes in the peripheral area.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-3, 5, 8-13 and 22, insofar as being in compliance with 35 U.S.C. 112 and as being best understood in view of the claim objections above, rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of JP'011 (JP 2571011; of record) and/or JP'060 (JP 2000-196060).

The disclosure of AAPA is discussed as applied to claims 17-19, 21, 23, 24, 26 and 27 above.

Although AAPA does not expressly disclose that the interlayer insulating layer can have a planarized top surface in the imaging area, one of ordinary skill in the art would readily such an interlayer insulating layer can be desirably planarized for better process/quality control for the patterned films formed later thereon, as readily evidenced in JP'011 (see the interlayer insulating layer 110 in Fig. 3b; also see the machine translation for JP 7-176714 for rough English reference) and/or in JP'060 (see layer 215 and/or 216 in Fig. 3; also see US 6,580,105 for English translation).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporated the planarized interlayer insulating layer of JP'011 and/or JP'060 into the device of AAPA, so that an imager device with better

Art Unit: 2811

process/quality control for the patterned films formed on the interlayer would be obtained.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References A and N are cited as being directly related to the prior art references applied above in this office action; while References B, C and L are related to a CCD device structure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shouxiang Hu whose telephone number is 571-272-1654. The examiner can normally be reached on Monday through Thursday, 7:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>.

Art Unit: 2811

Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SH
October 27, 2004

A handwritten signature in black ink, appearing to read "Shouxiang Hu", written in a cursive style.

**SHOUXIANG HU
PRIMARY EXAMINER**